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EXAMINER	
CHANG, ERIC	
ART UNIT	**PAPER NUMBER**
2116	

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/648,965	KELLER, LESLIE N.	
	Examiner	Art Unit	
	Eric Chang	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5-12-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 20-49 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 20-49 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 20, 33 and 46 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent 5,832,222 to Dziadosz et al.

5. As to claim 20, Dziadosz discloses a boot device for a computer comprising:

[a] two storage devices configured to store an operating system for booting the computer [col. 15, lines 17-23];

[b] wherein the two storage devices appear as a single target device to the computer system [col. 6, lines 58-65]; and

[c] wherein the boot device is configured so the computer system can access the operating system from either storage device in the event of a failure of one of the storage devices [col. 15, lines 35-38].

Dziadosz teaches that the various copies of the boot disk appear as a single image to the computer system. The computer system transparently interfaces with the single image, even though the image may comprise multiple boot devices [col. 3, lines 56-66], without specifically accessing the individual boot devices, substantially as claimed.

6. As to claim 33, Dziadosz discloses a boot device comprising a first and second storage device containing an operating system and appearing as a single device, wherein a computer system can access either said first or second storage device in the event of a failure of one of them. Because Dziadosz teaches the boot device, Dziadosz also teaches the computer system comprising said boot device, substantially as claimed.

7. As to claim 46, Dziadosz discloses a boot device comprising a first and second storage device containing an operating system and appearing as a single device, wherein a computer system can access either said first or second storage device in the event of a failure of one of them. Because Dziadosz teaches the boot device, Dziadosz also teaches the method implemented by said boot device, substantially as claimed.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 21, 23-30, 34, 36-43 and 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent U.S. Patent 5,832,222 to Dziadosz et al. in view of U.S. Patent 6,073,220 to Gunderson.

10. As to claims 21, 23-30, 34, 36-43 and 47-49, Dziadosz teaches that a pair of mirrored boot devices appear as a single image to a computer system [col. 6, lines 58-65], and that the boot device is configured so the computer system can access the operating system from either storage device in the event of a failure of one of the storage devices [col. 15, lines 35-38]. Dziadosz teaches all of the limitations of the claim, including that failure and recovery of the boot devices is handled [col. 15, lines 35-52], but does not teach the specific details or mechanisms of said error handling.

Gunderson teaches a specific implementation of a mirrored back-up system for boot devices [col. 1, lines 8-13]. Thus, Gunderson teaches a duplicated boot device similar to that of Dziadosz. Gunderson further teaches the specific details of how failure and recovery of the boot device is handled; the rejections of the limitations of Applicant's individual claims are given in the paragraphs below.

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the backup system as taught by Gunderson. One of ordinary

skill in the art would have been motivated to do so that data written to and read from the boot devices would be properly mirrored between a pair of redundant boot devices.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of using a pair of mirrored boot devices to provide a robust backup system. Moreover, the backup means taught by Gunderson would improve the robustness of Dziadosz because further teaches rebuilding a backup copy of the boot device if a defective boot device has been replaced [col. 5, lines 24-26, col. 10, lines 59-67, and col. 11, lines 1-7].

11. As to claims 21 and 34, Gunderson discloses the boot device is configured to receive read access from the computer system and respond with read data from either the first or second storage device [col. 1, lines 8-13]. Gunderson teaches that data may be accessed from either the first or second storage device, depending on the failure status of one of said storage devices.

12. As to claims 23-24, 30, 36-37, 43 and 47, Gunderson discloses the boot device receives write data from the computer system and stores data on both the first and second storage device [col. 3, lines 58-67, and col. 4, lines 1-11]. Gunderson teaches that the data written to the primary storage device is also written to the backup storage device by means well known in the art [col. 10, lines 17-58]. Furthermore, Gunderson teaches that the second storage device is configured to mirror the first storage device [col. 4, lines 20-24].

13. As to claims 25-26, 38-39 and 48, Gunderson discloses the boot device is configured to:

[a] detect a failure of one of the storage devices [col. 3, lines 11-18, and col. 5, lines 11-14];

[b] receive a replacement storage device for the failed storage device [col. 5, lines 24-26]; and

[c] mirror the non-failed one of the storage device to the replacement storage device [col. 10, lines 59-67, and col. 11, lines 1-7].

Gunderson teaches that the boot device can detect when one of the storage devices has failed, and facilitates the replacement of said drive. While the drive is being replaced, the computer system may continue to operate using the backup storage device, because the backup storage device contains all of the data from the primary drive mirrored, and can therefore be substituted in at any time [col. 4, lines 15-24]. When the failed drive has been replaced, Gunderson provides means by which data is mirrored from the non-failed drive to the replacement drive. In addition, because Gunderson teaches that the boot device detects and communicates failure information [col. 3, lines 11-18], it would be obvious that such communications would occur over any means well known in the art, such as a serial interface, substantially as claimed.

14. As to claims 27-29 and 40-42, Gunderson discloses a first and second port connecting said first and second storage devices, respectively, to the computer system, as a single target device [FIG. 1, and col. 13, lines 19-27]. Because they appear as a single device, it would be obvious to one of ordinary skill in the art that the computer system would treat them as having the same WWN with which to access the boot device. Furthermore, Gunderson teaches that if

one of the ports fails, the storage devices may still be accessed through the other port [col. 3, lines 15-18].

15. As to claim 49, Gunderson discloses the method further comprises removing one of the storage devices from operation [col. 5, lines 11-26], and restoring operating systems from a first storage device to a second storage device [col. 10, lines 59-66]. If the contents of the second storage device differ from the first storage device, through the restoration process, the contents of the second storage device may be mirrored from the first storage device, using the means taught by Gunderson. In this way, Gunderson provides for restoring operating systems from the first storage device if the upgrade process for the second storage device does not successfully complete, substantially as claimed.

16. Claims 22 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,832,222 to Dziadosz et al., in view of U.S. Patent 5,210,860 to Pfeffer et al.

17. As to claims 22 and 35, Dziadosz teaches all of the limitations of the claim, but does not teach that the boot device is configured to send a read access to both the first and second storage device and return data from whichever responds first.

Pfeffer teaches that mirrored drives using duplexed disk controllers are configured to send a read access to both the first and second storage device and return data from whichever responds first [col. 5, lines 60-68, and col. 6, line 1].

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the disk read means as taught by Pfeffer. One of ordinary skill in the art would have been motivated to do so that data would be continuously available to the computer system.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of implementing a mirrored disk drives. Moreover, the disk read means taught by Pfeffer would improve the responsiveness of Dziadosz because it allowed for faster retrieval of data from the boot device.

18. Claims 31-32 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,832,222 to Dziadosz et al., in view of U.S. Patent 6,140,926 to Hayden et al.

19. As to claims 31 and 44, Dziadosz teaches all of the limitations of the claim but does not teach that a redundant power supply is configured to provide power if another power supply for the boot device fails.

Hayden teaches that separate power sources may be used to power disk drives [col. 1, lines 20-35].

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ redundant power supply means as taught by Hayden. One of ordinary skill in the art would have been motivated to do so that power can be supplied to the boot device in the case of power supply failure.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of providing a fail-safe hard drive. Moreover, the redundant power supply means taught by Hayden would improve the availability of Dziadosz because it allowed the computer system to continue operating through a power failure condition.

Furthermore, use of other redundant power supplies, such as batteries, uninterruptible power supplies and capacitors are also well known in the art for providing backup power to computer systems in the case of power failure.

20. As to claims 32 and 45, Dziadosz teaches all of the limitations of the claim but does not teach that the boot device further comprises an LED configured to indicate if one of the storage devices fails.

Hayden teaches that LEDs are used to indicate if one of a plurality of storage devices fails [col. 3, lines 44-54].

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the LED indicator means as taught by Hayden. One of ordinary skill in the art would have been motivated to do so that the occurrence of failure of a storage device within the boot device can be visually conveyed to the user of the computer system.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of providing a fail-safe hard drive. Moreover, the LED indicator means taught by Hayden would improve the operation of

Dziadosz because it allowed the user to be visually notified of the failure of a storage device even if its corresponding power supply has also failed.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Chang whose telephone number is (703) 305-4612. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (703) 308-1159. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 2, 2004
ec

REHANA PERVEEN
PRIMARY EXAMINER